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Five new South African earthworm species of the family Microchaetidae (Oligochaeta) with exceptional anatomical features

by

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ABSTRACT

Five new microchaetid species from South Africa are described and illustrated: *Microchaetus tegwanus* sp. n., *Proandricus holbeck* sp. n., *Proandricus notabilis* sp. n., and *Tritogenia phinda* sp. n., from KwaZulu-Natal, and *Proandricus zeugosus* sp. n. from Eastern Cape. The species are anatomically exceptional and distinctive among known congeners, having spermathecal pores in the positions similar to the settings noted in the majority of sister-genera.

KEY WORDS: Clitellata, Oligochaeta, Microchaetidae, South Africa, taxonomy, new species, anatomy.

INTRODUCTION

New material of Microchaetidae recently added to the Natal Museum Oligochaeta Collection contained four new species which are described and attributed to the holandric genera *Microchaetus* and *Tritogenia*, and the proandric genus *Proandricus*. A fifth new species with interestingly shaped spermathecae, which was collected previously in Eastern Cape by the author and A. Zicsi but not yet documented in the literature, is also included and assigned to *Proandricus*. Within South African representatives of the Microchaetidae, the genera *Proandricus*, *Microchaetus*, *Tritogenia* and *Michalakus* may be easily recognised on the basis of the holandric/proandric conditions combined with characteristics of the excretory system, and location of the oesophageal gizzard. However the characterisation of species is far more difficult if the position of spermathecal pores is considered. Three of the newly described species are distinctive within their genera, having developed spermathecal pores in the positions similar to the settings noted in majority of sister-genera. The peculiarity of this event is apparent in Table 1. The full significance of this specificity is not yet known, and may only become better understood once the association between male and female reproductive organs in the microchaetids has been better studied.

MATERIAL AND METHODS

Five samples collected by A. Sanders, the owner of the Tegwanus Farm, three samples gathered by the Earthwatch South Africa's Hidden Species Project Team, and two mature specimens collected by D.G. Herbert of the Natal Museum Malacology Department, were the new material studied. The type material, and other examined material are housed in the Natal Museum Collection (NMSA). The terminology used in species descriptions, and assignments to species group, follows previous publications (Plisko 1992, 1993, 1997, 2000, 2003).

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TABLE 1

Selected features characterising genera within South African Microchaetidae. A percentage of species possessing certain character conditions is given in brackets.

General features	*Proandricus*	*Microchaetus*	*Tritogenia*	*Michalakus*
Testes/male funnels arrangement	Proandric: testes and male funnels in segment 10	Holandric: testes and male funnels in segments 10 and 11	Holandric: testes and male funnels in segments 10 and 11	Holandric: testes and male funnels in segments 10 and 11
Excretory system/nephridia	Holonephridia. One pair per segment	Holonephridia. One pair per segment	Meronephridia. More than one pair per segment	Meronephridia. More than one pair per segment
Oesophageal gizzard	In segment 7	In segment 7	In segment 6 or 6–7	In segment 6–7 and 9
Anterior spermathecal pores present in pre-testicular, or first post-testicular intersegmental furrows.	9,9/10,10/11 (13.5%)	8/9,9/10 (5.7%)	9/10–10/11 *T. phinda* sp. n. (2.2%)	None
Anterior spermathecal pores present in intersegmental furrow 10/11, with more pores occurring in two or more posterior furrows	10/11–12/13 *P. notabilis* sp. n. (2%)	10/11–15/16 (3.8%)	10/11–11/12,12/13 (19.5%)	10/11–12/13 *M. initus*
Anterior spermathecal pores present in intersegmental furrow 11/12, other pores occurring in one, two or more posterior furrows	11/12–12/13 (60%) (including *P. zeugosus* sp. n.) 11/12–13/14 (9 5%)	11/12–12/13 *P. caementerii, griphus, tegwanus* sp. n. (6%) 11/12–13/14,15/16,16/17 (2.3%)	11/12–12/13 (46.5%) 11/12–13/14,14/15,15/16, 16/17 (10.8%)	None
Anterior spermathecal pores present in intersegmental furrow 12/13, other pores also in more posterior furrows	12/13 (7.5%) 12/13–13/14 *P. marenzelleri* species group (5.5%) *P. holbeck* sp. n. 12/13–15/16 (2%)	12/13 (2%) 12/13–13/14,14/15,15/16, 16/17 (52%)	12/13 (13.5%) 12/13–13/14,14/15,15/16, (5.5%)	None
Anterior spermathecal pores present in intersegmental furrow 13/14, other pores also in two, three, or more posterior furrows	None	13/14 (2%) 13/14–14/15,15/16,16/17 (26.2%)	13/14–15/16 (2%)	None

The following abbreviations are used:

1/n — immediately followed by a figure refers to that part of segment covered by clitellar tissue.
cl — clitellate

TAXONOMY

Microchaetus Rapp, 1849

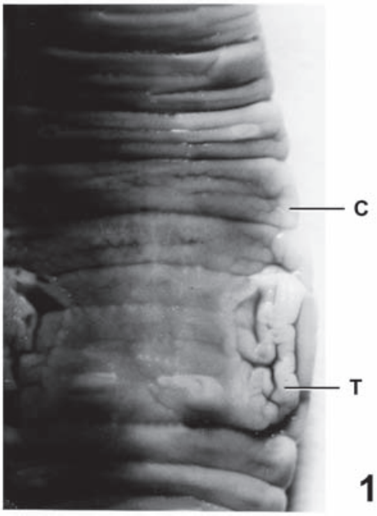
Microchaetus tegwanus sp. n.

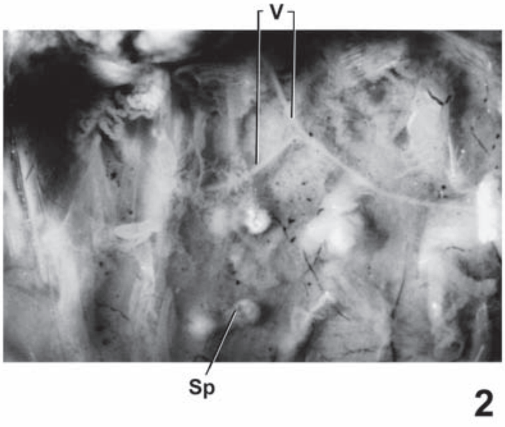
Figs 1, 2

Etymology: Named after the type locality.

Description:

External features: Body cylindrical. In life pigmented dorsally, with pale violet tint; grey when preserved in alcohol. Holotype 260 mm long, 7 mm wide at 10 and 11 mm at tubercula pubertatis. Paratype 115 mm long. *Segment number*: holotype 420. *Prostomium*: prolobous, small. *Segmentation*: secondary annulation present on preclitellar segments; 1 and 2 simple, short, with irregular longitudinal grooves; 3 simple, longer than first or second segment; 4–8 with two simple ringlets; 9 with two annulated ringlets; 10, 11 and postclitellar segments irregularly annulated. *Setae*: closely paired in regular rows; *aa* > *bc*, *ab* = *cd*. *Nephridial pores*: conspicuous, anterior to *c* setae; first pair in intersegmental furrow 2/3. *Female pores*: in 14 between *b–c* setae. *Male pores*: in 17/18 or 18, in region of tubercula pubertatis. *Spermathecal pores*: obvious, in intersegmental furrows 11/12 and 12/13. *Papillae*: on 20, paired, moderate swellings, linked with genital glands.





Figs 1, 2. *Microchaetus tegwanus* sp. n., holotype: (1) ventral view with clitellum and tuberculum pubertatis, 60 X; (2) dorsal dissection of preclitellar part of body, showing anterior parts of vas deferens, and spermathecae, 90 X. Abbreviations: C–clitellum, T–tuberculum pubertatis, Sp–spermatheca, V–vas deferens commencing in segments 10 and 11.

Clitellar region (Fig. 1): *Clitellum*: saddle-shaped, segmented, white, on 12,13–23; on 12 dorsally with poorly defined border; posteriorly clearly marked; laterally clitellar tissues extending to *cd* setal lines. *Tubercula pubertatis*: rectangular pads with rounded corners, irregularly creased, segmented; on 17–20, covering only partially intersegmental furrow 16/17; clearly separated from clitellar tissues by narrow rims; dorsal borders below *c* setae, ventral above *b* setae, rimmed.

Internal characters: *Septa*: 4/5–6/7 not thickened; 7/8 and 8/9 strongly thickened, muscular; other septa thin. *Gizzard*: in 7, spherical, muscular, posteriorly softened. *Calciferous glands*: in 9, attached closely to oesophagus, separated dorsally and ventrally. *Intestine*: commences in 13. *Typhlosole*: commences in 13 as thin tube, gradually enlarging and becoming U-shaped; in holotype terminates in 260. *Dorsal blood vessel*: 4–7 thin, double; 8 double, widely separated; 9 enlarged, double, cordiform; simple when crossing septa; in 10 and following segments enlarged, simple. *Paired dorsoventral vessels*: 5–8 thin, 9–11 enlarged, moniliform. *Nephridia*: holonephridia; large, bushy coiled loops, with extended V-shaped, much elongated caeca. *Male funnels*: holandric arrangement; two pairs, different in size and appearance. Anterior pair large, iridescent, enclosed in sacs, occupying large part of segment 10; posterior pair in 11, small, enclosed in seminal sacs closely connected at septum of 10/11. *Vasa deferentia* (Fig. 2): commencing on lateral sides of male funnels in 10 and 11 respectively, extending to 12 where becoming close, extend as fused tubes, proceeding to intersegmental furrow 17/18, where entering body wall. It was not established if male pores are in intersegmental furrow 17/18, or proceed to 18. *Seminal vesicles*: one pair, large sacs, commencing at septum 10/11 extending to 11. *Spermathecae*: in 12 and 13; two pairs per segment; each spermatheca on enlarged base; ampulla extended and slightly bent or curved posteriorly; ectal parts entering into intersegmental furrows 11/12 and 12/13; iridescence observed in posterior parts of elongated ampullae. *Ovaries*: large, folded funnels in 13, adjacent to septum 13/14; oviduct simple, extending in 14 to area of *c* setae. *Genital glands*: one pair in 20; each gland composed of two finger-shaped, twisted and folded parts; in holotype anterior parts proceed to 16, posterior to 21–22, partly proceeding under intestine; both glands linked with external papillae.

Comparison and comments: This species is distinctive in having spermathecal pores in intersegmental furrows 11/12 and 12/13. Previously this character has been noted only in two other species of this genus: *M. caementerii* Michaelsen, 1913 and *M. griphus* Plisko, 2002. However, these three species differ vastly in their body sizes, pigmentation, position and shape of their clitella and tubercula pubertatis, and thickness of septa. They are geographically widely separated narrow-range-endemics. It is noteworthy that in the majority of species of holandric *Microchaetus*, the spermathecal pores are present in the intersegmental furrows 12/13 and 13/14, whereas in the species of the proandric genus *Proandricus* the spermathecal pores occur most frequently in intersegmental furrows 11/12 and 12/13 (Table 1). *M. tegwanus* has two male funnels, a holandric character, although the second pair is much smaller than the anterior one. Two pairs of *vasa deferentia* starting in segments 10 and 11 on each side of the body, run to segment 12, where they become close and fused.

Holotype: clitellate, NMSA/Olig.03784: *KwaZulu-Natal*: Underberg area, Tegwan Farm (29°46'S:29°32'E), in moist soil of grassland with rye-grass, 25.iv.2003, A. Sanders.

Paratypes: NMSA/Olig.03782, 1 cl, and NMSA/Olig.03785, 3 juvenile, near type locality, 25.iv.2003, A. Sanders.

Other material examined: NMSA/Olig.03776, 1 cl, and NMSA/Olig.03783, 3 juvenile, near type locality, in marshy area, 25.iv.2003, A. Sanders.

Biological notes and distribution: The species was found in grassland soil, under roots of various plants, in moderately moist and also marshy sites. The presence of sperm in male funnels and spermathecae indicates maturity and readiness for reproduction, suggesting sexual activity of this species in summer, extending into early autumn.

The type locality and other collection sites are in the foothills of the Drakensberg range in KwaZulu-Natal.

Proandricus Plisko, 1992

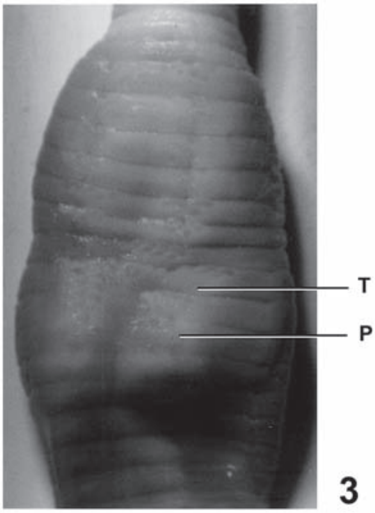
Proandricus holbeck sp. n.

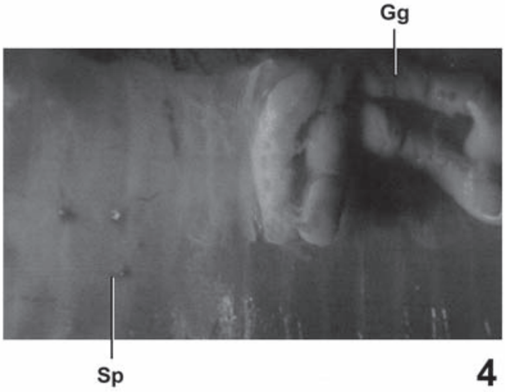
Figs 3, 4

Etymology: Named after Holbeck, the type locality area.

Description:

External features: Body cylindrical. Preserved in alcohol yellowish-grey, not pigmented. Holotype, being probably abscised posteriorly when collected, 117 mm long, 4 mm wide at 10 and 8 mm at tubercula pubertatis; paratype 115 mm long. *Segment number*: holotype 214+; paratype, with posterior part regenerated at earlier state, 145. *Prostomium*: prolobous, small. *Segmentation*: secondary annulation present on preclitellar segments; 1 and 2 simple, with irregular longitudinal grooves; 3 simple; 4–8 with two simple ringlets, similar in size and appearance, 9 with two ringlets, posterior shorter than anterior; 10, 11 and clitellar segments simple, similar in size; postclitellar randomly annulated. *Setae*: minute, closely paired in regular rows; *aa* > *bc*. *Nephridial pores*: conspicuous, in front *cd* setae; first pair in intersegmental furrow 2/3. *Female pores*: in 14 between





Figs 3, 4. *Proandricus holbeck* sp. n., paratype: (3) clitellar region, ventral view, showing tubercula pubertatis and papilla of segment 19, 60 X; (4) ventral view showing genital gland and spermathecae, 120 X. Abbreviations: P–papilla, T–tuberculum pubertatis, Gg–genital gland, Sp–spermatheca of segment 13.

b–c setae, closer to *b*. *Male pores*: in 17/18, in tubercula pubertatis. *Spermathecal pores*: obvious; one pair in intersegmental furrow 12/13; two pairs in 13/14. *Papillae*: on 19 and 20, paired, large, yellowish, linked with genital glands.

Clitellar region (Fig. 3): *Clitellum*: saddle-shaped, segmented, white, on 13–24; anterior and posterior border well marked; laterally clitellar tissues extending to *ab* setae. *Tubercula pubertatis*: rectangular pads with rounded corners, segmented; on 17–20, proceeding between *cd* and *ab* setal lines, covering only partially segment 16 at intersegmental furrow 16/17; clearly separated from clitellar tissues by narrow grooves.

Internal characters: *Septa*: 4/5–6/7 not thickened; 7/8 and 8/9 strongly thickened, muscular; other septa thin, soft. *Gizzard*: in 7, globular; soft at septum 6/7, muscular when terminating at 7/8. *Calciferous glands*: in 9, globular, distinctly separated dorsally, ventrally with narrow groove. *Intestine*: commences in 13. *Typhlosole*: exact commencement was not established due to much softened tissues; possibly in 18; terminates in holotype behind 214; in paratype, having 145 segments, terminates in 143; presence of typhlosole in segment preceding last segment may be indicative of specimen regeneration. *Dorsal blood vessel*: 5–6 double, separated; in 7 double, separated in posterior part, 8 double, widely separated; 9 enlarged, double, cordiform; simple when crossing septa; in 10 and following segments, enlarged, simple. *Paired dorsoventral vessels*: 5–8 thin, 9–11 enlarged, moniliform. *Nephridia*: bushy coiled loops, with extended V-shaped, much elongated caeca. *Male funnels*: proandric arrangement; one pair of large, iridescent funnels, enclosed in sac closely connected posteriorly at septum 10/11 with seminal sacs. *Vasa deferentia*: single tubes extending to intersegmental furrow 17/18, where entering body wall and male pores. *Seminal vesicles*: one pair, heavily swollen sacs, commencing at septum 10/11, extending into 11. *Spermathecae*: in segments 12 and 13, variable size, dark-grey; anterior pair very small, globular, deeply embedded in wall tissue, with ectal parts at 12/13; in segment 13 two pairs, larger than anterior, elongated, curved, with ectal parts in intersegmental furrow 13/14. Iridescence not observed in any spermathecae. *Ovaries*: not observable due to internal decomposition of this part of body. *Genital glands* (Fig. 4): one pair in 19; each composed of two J-shaped, elongated sausage-like glands, and two slightly shorter and thinner finger-shaped; all linked with external papillae.

Comparison and comments: This proandric species with spermathecal pores in intersegmental furrows 12/13 and 13/14, male pores in 17/18, and with only two thickened septa 7/8 and 8/9, is unique among known congeners. In other proandric species with spermathecal pores located in 12/13 and 13/14, constituting the *marenzelleri* species-group (Plisko 2005), the male pores occur in intersegmental furrow 15/16, and three septa are thickened.

Holotype: clitellate, NMSA/Olig.03911: *KwaZulu-Natal*: Karkloof [range], Holbeck area, Mbona [Estate] (29.30087ºS:30.35948ºE), alt. approx. 1300 m, shrubby grassland, on path after rain, 19.iv.2004, D.G. Herbert. Middle part of the body partially extended during preservation, internally slightly decomposed.
Paratype: NMSA/Olig.03912, 1 cl, collected with holotype.

Biological notes and distribution: This species was found in shrubby grassland situated between stands of indigenous mistbelt forest characteristic of the Midlands in KwaZulu-Natal. It was collected close to the range of the microchaetid *Tritogenia lunata* Plisko, 1997.

Proandricus notabilis sp. n.

Fig. 5

Etymology: L. *notabilis* (noteworthy, distinguished). Refers to the unusual position of spermathecae.

Description:

External features: Body cylindrical. Preserved in alcohol dorsally brownish-grey, ventrally grey. Abnormally extended during preservation, internally slightly decomposed. Holotype 360 mm long, 8 mm wide at 10, and 8 mm at tubercula pubertatis. *Segment number*: holotype 376. *Prostomium*: prolobous, small. *Segmentation*: secondary annulation present on preclitellar segments; 1 and 2 simple, with irregular longitudinal grooves; 3 simple; 4–9 with two simple ringlets, posterior shorter than anterior; 10 and 11 simple, clitellar segments simple, similar in size, postclitellar simple, randomly annulated. *Setae*: minute, closely paired in four regular rows. *Nephridial pores*: conspicuous, in front of *cd* setae. *Female pores*: not observed, probably in 14 laterally, where there are slight marks. *Male pores*: in 14/15, in front of tubercula pubertatis. *Spermathecal pores*: obvious in intersegmental furrows 10/11, 11/12 and 12/13. *Papillae*: not observed.

Clitellar region (Fig. 5): *Clitellum*: saddle-shaped, segmented, white, on 1/n11, 12–1/n22; anterior and posterior borders not clearly marked; clitellar tissues extending partially on 11 and 22 respectively, and covering only dorsal parts of the segments; laterally extends to tubercula borders. *Tubercula pubertatis*: well developed, elongated strips, on 1/n15–18, between *cd–ab* setae, with shallow grooves separating each strip from clitellar tissues.

Internal characters: *Septa*: 4/5 heavily thickened, muscular, extending to nearly half of segment 5; 5/6 and 6/7 not thickened; 7/8 and 8/9 thickened much less than 4/5, muscular; other septa thin, firm. *Gizzard*: in 7, globular, muscular. *Calciferous glands*: in 9, attached laterally with oesophagus; distinctly separated dorsally and ventrally. *Intestine*: commences in 13. *Typhlosole*: commences possibly in 20, terminates in holotype in 165. *Dorsal blood vessel*: 4–7 simple; 8 double, separated; 9 enlarged, double, cordiform; in 10 and following segments enlarged, simple; simple when crossing septa. *Paired dorsoventral vessels*: 5–8 thin, 9–11 enlarged, moniliform. *Nephridia*: due to poor specimen preservation, precise shape and position of excretory organs were not established; decomposed parts of holonephridia were observed in anterior segments. *Male funnels*: proandric arrangement; one pair of large, iridescent funnels, enclosed in sac closely connected posteriorly at septum 10/11 with seminal sacs. *Vasa deferentia*: not observed due to decomposed tissues. *Seminal vesicles*: one pair of irregularly shaped sacs, commencing at septum 10/11, extending into 11. *Spermathecae*: in segments 10, 11, 12; anterior pair very small, globular, deeply embedded in wall tissue; ectal parts entering in intersegmental furrow 10/11. Second pair slightly larger than anterior; elongated thecae with ectal parts in intersegmental furrow 11/12. Posterior pair in 12; large, elongated club-shaped, with ectal parts entering in 12/13. Iridescence observed only in posterior pair. *Ovaries*: not observed. *Genital glands*: not observed.

Comparison and comments: This species is unique among all known congeners, having three pairs of spermathecae in segments 10, 11 and 12, with spermathecal pores in intersegmental furrows 10/11, 11/12, 12/13. The spermathecal pores occurring in these intersegmental furrows characterise no other proandric species. Until now such position of the spermathecal pores has been noted only in holandric microchaetids of genera *Tritogenia* and *Michalakus* (Table 1).

Holotype: clitellate NMSA/Olig.03620: *KwaZulu-Natal*: Phinda (27.77751ºS:32.3107ºE), 16.iii.2004, M. Hamer (Earthwatch Team 6, 2457).
Paratype: NMSA/Olig.03913, 1 cl, collected with holotype.

Biological notes and distribution: This species was found together with *Microchaetus natalensis* (Kinberg, 1867), *Tritogenia phinda* sp. n., and juvenile specimens of *Proandricus* sp. It is known only from one locality in northern KwaZulu-Natal.

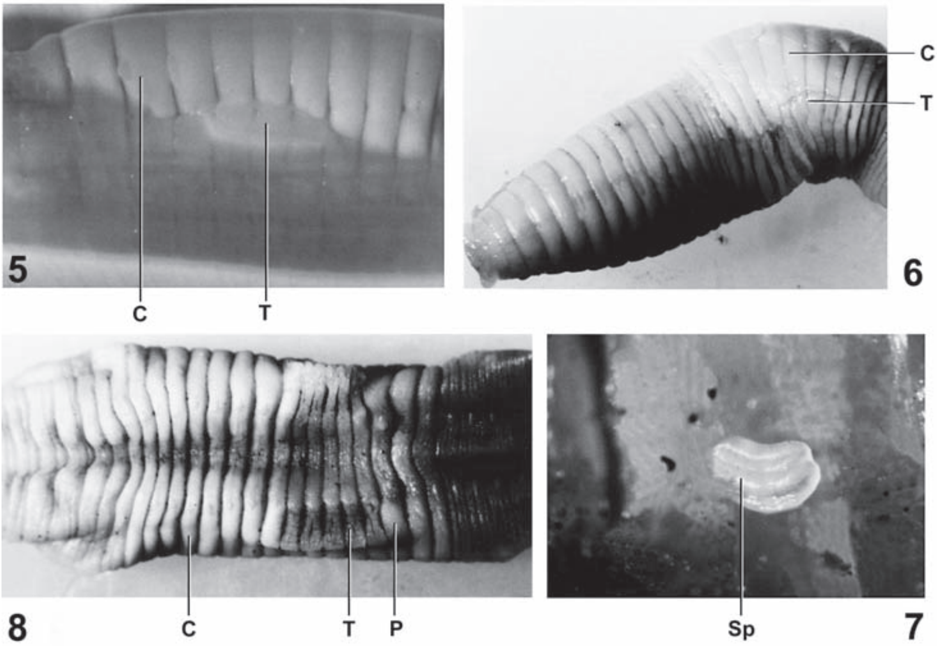
Proandricus zeugosus sp. n.

Figs 6, 7

Etymology: Gr. *zeugos* (a team, pair). Refers to the paired spermathecae observed in this species.

Description:

External features: Body cylindrical. In life dorsally violet-grey; yellowish-grey after preservation in alcohol for more than ten years. Holotype when preserved 52+ mm long, 4 mm at 10 and 5 mm at clitellum; aclitellate paratypes when preserved



Figs 5–8. (5) *Proandricus notabilis* sp. n., holotype, lateral part of clitellum and tuberculum pubertatis, 60 X; (6, 7) *Proandricus zeugosus* sp. n., holotype: (6) anterior part of body, laterally, 60 X, (7) spermathecae of segment 12, 140 X; (8) *Tritogenia phinda* sp. n. holotype, clitellar region, ventral view, 60 X. Abbreviations: C–clitellum, T–tuberculum pubertatis, P–papilla of segment 25, Sp–spermathecae.

26–72 mm long, 3 mm wide. *Segment number*: holotype abscised 120+, aclitellate paratype 202. *Prostomium*: prolobous, small. *Segmentation*: secondary annulation present on preclitellar segments; 1 and 2 short, with irregular longitudinal grooves; 3 simple, longer than segment 1 or 2; 4–8 with 2 simple ringlets similar in size and appearance; 9 with 2 ringlets, second shorter than first; 10 and 11 simple, short; clitellar segments dorsally and ventrally with irregular annulation. *Setae*: closely paired, minute; first pairs on 3. *Nephridial pores*: first pair in intersegmental furrow 3/4. *Female pores*: in anterior part of segment 14, between *a–a* setae. *Male pores*: in intersegmental furrow 17/18, in area of tubercula pubertatis, in small invaginations. *Spermathecal pores*: in two intersegmental furrows 11/12 and 12/13, dorso-laterally.
Clitellar region (Fig. 6): *Clitellum*: saddle-shaped, well developed, segmented, on 11–21; on 11 and 21 thinner layer of clitellar tissues; lateral borders parallel with *cd* setal lines; separated from tubercula pubertatis by narrow grooves. *Tubercula pubertatis*: on 1/n14–18; flat glandular bands, rounded at corners, segmented, detached from clitellum by narrow grooves; ventrally extended to *b* setae. *Papillae*: on 16–19; tiny swellings below tubercula pubertatis; paired, linked with *ab* setae.

Internal characters: *Septa*: 4/5 slightly thickened, 5/6 and 6/7 not thickened, very thin; 7/8 and 8/9 thickened more than 4/5, both muscular, firm, similar in size and appearance; other septa thin. *Gizzard*: in 7, small; barrel-shaped, anteriorly muscular; posteriorly softened. *Calciferous glands*: in 9, separated dorsally and ventrally. *Intestine*: commences in 12. *Typhlosole*: commences probably in 19, U-shaped, large. *Dorsal blood vessel*: in segments 4–6 double, separated, in 7 anteriorly simple, posteriorly double, separated; in 8 double, separated; in 9 cordiform; simple, when crossing septa, in 10 and the following segments. *Paired dorsoventral vessels*: 4–7 simple, thin, 8 slightly enlarged, 9–11 enlarged, moniliform. *Nephridia*: holonephridia, one pair per segment; coiled loops with elongated, multi-folded caeca. *Male funnels*: proandric arrangement; one pair in 10, of large funnels enclosed in sac, closely connected to seminal sacs. *Vasa deferentia*: not observed due to contracted segments in this area of body. *Seminal vesicles*: one pair of large sacs, anteriorly connected with sac of male funnels at 10/11, extending to 11. *Spermathecae*: in 11 and 12, close to intersegmental furrows 11/12 and 12/13; in 11 one pair of small, elongated, simple ampullae; in segment 12 at its left side, closely joined twin-ampullae; at right side double twin-ampullae (Fig. 7). *Ovaries*: not observed. *Genital glands*: paired; in segments 12 and 13 very small, circular, flat; in 15 much larger, flat, glandular.

Comparison and comments: This species, having spermathecal pores in intersegmental furrows 11/12 and 12/13 and three variably thickened septa 4/5, 7/8 and 8/9, may be, with reservation, allocated to the *belli* species-group. However, *P. zeugosus* differs from other congeners in the shape of its spermathecae, commencement of the intestine, and very specific shape of its nephridia.

Holotype: clitellate, NMSA/Olig.01192: *Eastern Cape*: Cradock area, Mountain Zebra National Park (32º08'S:25º38'E), alt. approx. 1800 m, near local stream, 5.xii.1991, J.D. Plisko & A. Zicsi.
Paratypes: NMSA/Olig.01147, 6 aclitellate specimens collected together with holotype.

Biological notes and distribution: This species was collected at the entrance to the Mountain Zebra National Park, near a small stream, in moist soil between roots of various plants. It is known only from the type locality in the Eastern Cape.

Tritogenia Kinberg, 1867

Tritogenia phinda sp. n.

Fig. 8

Etymology: Named after the type locality Phinda.

Description:

External features: Body cylindrical, compact after preservation. Grey in life; whitish-grey when preserved in alcohol. Contracted during preservation, abscised holotype 55+ mm long, 5 mm wide at 10 and 6 mm in region of tubercula pubertatis. *Segment number*: 125+. *Prostomium*: prolobous, not clearly separated from first segment. *Segmentation*: secondary annulation present on preclitellar segments: 1–3 simple, with irregular longitudinal grooves; 4–9 with 2 simple ringlets with second ringlet shorter than first; segment 10, clitellar and postclitellar simple. *Setae*: minuscule, closely paired; in preclitellar segments noticeable on first ringlets of segments 4–9, and on segments 10–12. *Nephridial pores*: not observed. *Female pores*: externally not observed. *Male pores*: probably in intersegmental furrow 18/19. *Spermathecal pores*: externally not observed.

Clitellar region (Fig. 8): *Clitellum*: saddle-shaped, segmented, white; on 12–26; laterally extends to *ab* setae. *Tubercula pubertatis*: on 20–24; right tuberculum developed as oblong glandular swellings randomly grooved by irregular shallow furrows running parallel with intersegmental furrows; left compact, with shallow furrows (deformation probably occurred during collection). *Papillae*: small blisters around *ab* setae on 8–18; on 19 and 25, 26 moderate swellings in front of and behind tubercula.

Internal characters: *Septa*: 4/5, 5/6 thin, not thickened; 6/7, 7/8, 8/9 thickened moderately, not muscular, similar in thickness and appearance; 9/10 absent; other septa in preclitellar segments thin; in posterior segments slightly thicker. *Gizzard*: large, muscular, in 6–7; commencing in 6, extending to and occupying whole 7, terminating abruptly at septum 7/8; septum 6/7 attached to anterior part of gizzard. *Calciferous glands*: not stalked, in 9–10, separated dorsally and ventrally. *Intestine*: commences in 13, not clearly separated from thick oesophagus. Irregularly shaped diverticulum in segments 20–24. *Typhlosole*: commences in 20 as thick, V-shaped, gradually enlarging tube; terminates in 64. *Dorsal blood vessel*: double in 4–11 and when crossing septa 4/5–10/11; in 12 slightly enlarged, single; in following segments narrow, single. *Paired dorsoventral commissural vessels*: in 4–8 thin, gradually enlarging; in 9–11 thick, moniliform. *Nephridia*: Meronephridia; two pairs; ventral pairs close to median body-line, second pairs dorsally. *Male funnels*: holandric arrangement; similar size and appearance, in 10 and 11 respectively, free, iridescent. *Seminal vesicles*: two pairs; in 11 and 12 respectively. *Spermathecae*: club-shaped, small; in 9 one pair with ectal parts near intersegmental furrow 9/10; in 10 only one spermatheca at right side, with its ectal part at 10/11. *Ovaries*: not observed. *Genital glands*: not observed.

Comparison and comments: *T. phinda* is unique in the genus for having the anterior pair of spermathecae located in intersegmental furrow 9/10. The clitellum located on segments 12–26 suggests similarity to *T. kruegeri* Plisko & Zicsi, 1991, although the position of the tubercula pubertatis on 19–24, and the number and position of spermathecae in segments 9 and 10 are different. Location of spermathecal pores in intersegmental furrows 9/10 and 10/11 is known only in species of *Proandricus* (Table 1), with no other external or internal similarity between them and *T. phinda.*

Holotype: clitellate, NMSA/Olig.03907: *KwaZulu-Natal*: Phinda (27.87726ºS:32.33983ºE), 18.iii.2004 (Earthwatch Team 7, 15242).

Biological notes and distribution: This species was found together with *Microchaetus natalensis*, *P. notabilis* sp. n., and juvenile specimens of *Proandricus* sp. This species is known only from the type locality in northern KwaZulu-Natal.

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